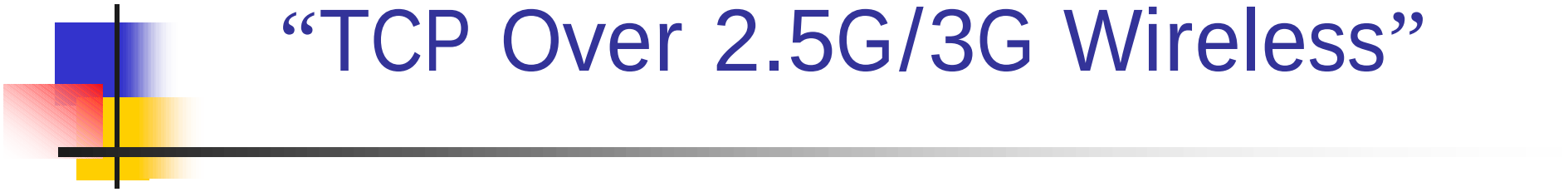

PILC BCP RFC: "TCP Over 2.5G/3G Wireless"

March 2001

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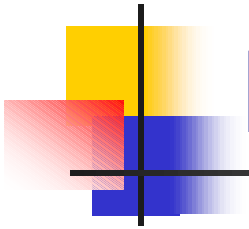
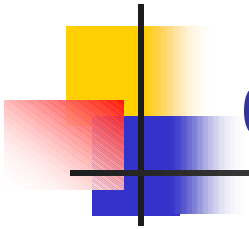


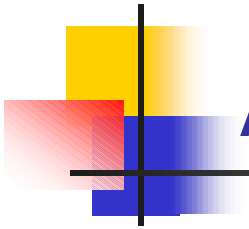
Background

- 2.5G/3G wireless networks (GPRS, UMTS and IMT-2000) are being developed and deployed worldwide.
- A primary motivation for these is data communication, and, in particular, Internet access, TCP performance is a key issue.
- There have been efforts to choose, standardize and deploy optimum sets of TCP optimization techniques for such networks.
- WAP Forum has investigated various optimization techniques for its next generation protocol and is adopting a profile of TCP optimizations to address the requirements for such new networks.
- The profile is composed of techniques that are derived from previous works at the IETF/PILC.
- The profile is supported by a large number of wireless carriers, manufacturers and system integrators. It is expected to be deployed widely to enable Internet access over 2.5G/3G wireless networks.

Why a “TCP Over 2.5G/3G Wireless” document?

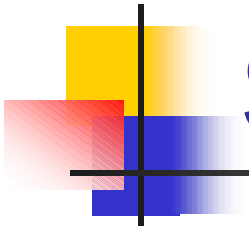


- TCP is a key transport technology for 2.5G/3G wireless networks to ensure Internet access.
- TCP optimization is needed to address the characteristics of the 2.5G/3G networks.
- Extensive deployment of a profile of TCP over 2.5G/3G networks with optimizations derived from IETF previous works is underway.
- It is beneficial for Internet community to document it as a part of best current practice, for recommendations and further improvements.
- PILC has had a plan to write a BCP document. But it is already overdue for one year.
  - Authors are willing to complete it using the discussion and result of WAP-NG transport protocol consideration as a basis, combining with other related techniques.



Agreed at San Diego meeting

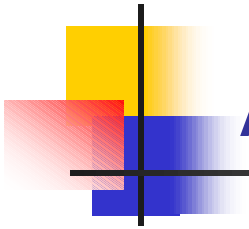
- Heading of the BCP “TCP Over 2.5G/3G Wireless”
  - An instance of the “TCP over wireless” document
  - Narrowed the subject to be a small and succinct doc
- The profile will have potentially a large number of deployments
  - Wireless Internet access is a rapidly growing market
  - A large number of companies is supporting it through WAP Forum.
- Help WAP Forum converge to Internet standards
  - WAP Forum is building a next generation standard based on the Internet standards, i.e., TCP, HTTP and XHTML.



Scope of the document

- More general perspective than TCP specification in WAP
  - (1) Use WAP TCP profile as a basis of recommendation and add further techniques that are suitable for the recommendation
  - (2) Those that are not ready for recommendation will be described as research topics and explicitly flagged.
- Describe characteristics of 2.5G/3G networks
- Introduce representative deployments of the recommendation
- A short and succinct document with references to the other IETF/PILC documents

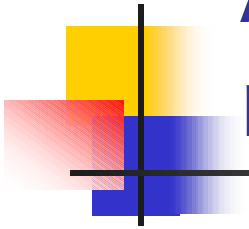
Quick Review of the draft: "TCP Over 2.5G/3G Wireless"



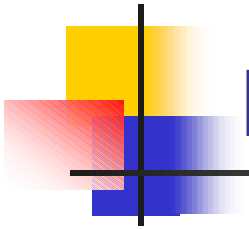
An example of 3G wireless network

- Wideband CDMA
  - Persistent L2ARQ
  - GPRS evolved architecture
  - Characteristics (seen from transport layer)
    - High BW up to 384kbps
    - Large delay and jitter arising from link layer error control
    - Low packet loss

A TCP profile for 2.5G/3G wireless networks

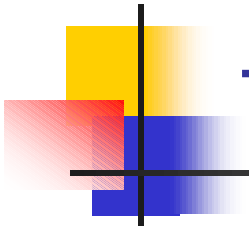


- Large window size
- Large initial window
- MTU larger than default IP MTU
- Path MTU discovery
- Selective Acknowledgments
- Explicit Congestion Notification



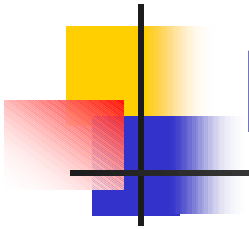
Possible Deployment

- i-mode
  - 20 million subscribers in Japan for current i-mode
- WAP
  - More than 600 constituency
- Ricochet MCDN Network



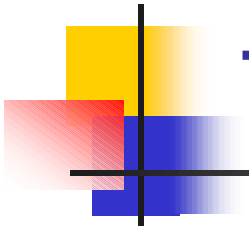
To Do

- It is rough stage. More comments?
- May need more examples of
  - Wireless bearers
    - CDMA2000?
  - Possible Deployment
    - ??
- More reference to other PILC documents?



Roadmap

- Kick off and go-ahead from PILC -DONE
  - IETF Meeting, San Diego Dec. 15, 2001
- Proceed drafting - DONE
  - WAP London, Feb.5-9, 2001
- Publish ID -DONE
  - March 1, for IETF meeting, March 18-23, 2001, Minneapolis
- Get feedback at IETF, March 18-23
- Update ID before 51st meeting, August in London
- Last call after 51st meeting



Thank you!

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